DOCUMENT RESUME

ED 186 158 RC 011 628

AUTHOR Christenson, James A.; Taylor, Gregory S.
TITLE Determinants, Expenditures, and Performance of Common Public Services.
SPONS AGENCY Kentucky Univ., Lexington. Agricultural Experiment Station.
PUB DATE 79
NOTE 28p.; Paper presented at the Annual Meeting of the Rural Sociological Society (Burlington, VT, August, 1979). Table 1 may not reproduce well due to small print size.

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Community Characteristics; *Community Satisfaction; *Community Services; Demography; Education; *Evaluation Criteria; *Expenditures; Law Enforcement; Literature Reviews; Medical Services; Parks; Perception; Public Libraries; *Socioeconomic Influences; Surveys
IDENTIFIERS *North Carolina; Service Quality; Service Quantity

ABSTRACT

Citizen perception of public service quality was examined to determine its relationship to demographic and socioeconomic characteristics of the community, variations in service expenditures, and quantitative service performance measures. The Bureau of the Census, state agencies, and a mail survey of residents in all 100 North Carolina counties provided data on 5 public services: education, law enforcement, parks, health, and libraries. The qualitative output measure for each service was based upon citizen evaluation of service quality as poor, fair, good, or excellent on a 4-point Likert scale. The quantitative performance measures were dropout rate, crime index, per capita acres in public parks, infant mortality rate, and number of books per capita. The findings indicate that per capita expenditures for the public services studied are not powerful predictors of either quantitative performance or perceived service quality. Quantitative service performance measures have only a modest relationship with service quality measures. Overall, the socio-demographic characteristics of the community seem to be more important than either level of expenditures or quantitative measures of service performance in predicting citizen perception of service quality. (JH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

Rec 01-10-79

ED186158

DETERMINANTS, EXPENDITURES, AND PERFORMANCE OF COMMON PUBLIC SERVICES[1]

by

James A. Christenson
and
Gregory S. Taylor

Department of Sociology
University of Kentucky
Lexington, Kentucky 40546

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

James A. Christenson

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

Paper to be presented at the 1979 Annual Meetings of the Rural Sociological Society, Burlington, Vermont.

[1]This research was partially supported by the Kentucky Agricultural Experiment Station, journal article #79-14-96 and is published with approval of the Director. Data were gathered by the senior author while at North Carolina State University, Raleigh.

RC011628

1979

Determinants, Expenditures, and Performance

of Common Public Services

ABSTRACT

This paper studies the relationship between expenditures (inputs) for selected public services and both quantitative and qualitative output measures of these services. The economic expenditure determinant literature has used public service expenditures as the dependent variable and various demographic and socioeconomic locality conditions as independent variables in most studies of public services. Extending this line of investigation, this research assesses the degree to which the situation/locality in which the service is produced, variations in service expenditures, and/or quantitative service performance measures influence citizens' perceptions of service quality. Data come from the Bureau of the Census, state agencies, and a statewide survey of county residents in North Carolina.

The findings indicate the per capita expenditures for each of five different public services (law enforcement, libraries, parks, health, and education) are not powerful predictors of either quantitative performance or perceived service quality when adjustments are made for demographic and socioeconomic location factors. However, quantitative service performance measures do seem to have a modest relationship with service quality measures. Overall, the situation in which the service is produced seems to be more important than either the level of expenditures or quantitative measures of service performance in predicting peoples' perception of service quality. The findings suggest that peoples' perceptions of service quality may be misleading if they are assumed to be affected only by the service, in that perceptions of quality seem to be more a product of the local situation than a reflection of a service itself.

DETERMINANTS, EXPENDITURES, AND PERFORMANCE

OF COMMON PUBLIC SERVICES

Public service performance and quality are subjects of considerable discussion in lay, political and academic circles (Shin, 1977). Yet, despite this intense interest, there seems to be little agreement on appropriate measures of common public services or their determinants (Fisk and Winnie, 1974; Clark, 1975; Ostrom, 1976, 1977; Hirsch, 1977). Focusing on the measurement of service performance, the question arises whether value lies in a service itself or in the psychological state produced by it (i.e., is the proper measure of a service its properties or peoples' perceptions of them)? This question has been raised by Greene and his associates (1977) when looking at measurement issues in public sector performance. The question, they note, may at first glance be rather esoteric, but the answer may have considerable theoretical and practical implications. "The capacity to define values is a critical element in the capacity to allocate them, and the authoritative allocation of values is what practical politics is all about" (Greene, et al., 1977:1). Thus, the measurement and relationship between determinants of public service inputs and performance is a major area of needed research (Clark, 1975; Fisk and Winnie, 1974) and is of considerable political import because of the possible budgetary cuts or alterations in these times of fiscal restraint (Glasberg, 1978).

A frequent assumption has been that expenditures for public services are the primary determinants of performance levels for such services--the greater the expenditures, the better the service. As such, level of expenditure is often seen as an indicator of public service quality. Ostrom (1972:488) comments that "one of the most perplexing problems facing those interested in quantitative, comparative urban research is the development of valid measures of output." She notes that most past research has relied on expenditure figures as indicators of service outputs (also see Stinson and Krahmer, 1969:1553; Gastil, 1970), but

such indicators should be considered effort or input measures. Output measures, on the other hand, should manifest quantitative or qualitative estimates of performance.

The purpose of this paper is to explore that relationship between expenditures (inputs) for various services within qualitative and quantitative output measures for this same group of commonly provided public services. Specifically, we will study the relationship of per capita expenditures as an input measure with two output measures, a quantitative performance measure and a qualitative measure of citizens' perceptions for five public services in 100 different size localities. Shin (1977:208) observes that "one of the most obvious deficiencies of the existing knowledge of urban services is its almost exclusive reliance on data from large metropolitan areas..." This paper will attempt to overcome this limitation, by including localities which range in size from metropolitan core counties to very rural counties. The five services selected (law enforcement, education, medical, libraries and parks) also provide a cross section of public services varying in the extent to which they are funded from local funds to those which have sizable state and federal income transfers. Since a long tradition of expenditure determinant research (e.g., Fabricant, 1952; Hawley, 1951, and see reviews by Bahl, 1969; Hirsch, 1977) has demonstrated that the demographic and socioeconomic characteristics of the locality have an effect in determining levels of public service inputs, and since Schuman and Greenberg (1970) have shown that more variance can be explained by the characteristics of respondents in a locality than by urban service levels, situational attributes of a locality will be taken into account.

In summary, this paper seeks to contribute to the literature in five ways: (1) by extending the expenditure determinant literature to include output measures, (2) by testing the relationship between input and output measures for five different types of services, (3) by studying the relationship between quantitative and

qualitative performance measures, (4) by conducting this research on a wide range of localities from very rural to metropolitan, and (5) by discussing the policy implications of alterations in service determinants on service performance.

CONCEPTUAL FRAMEWORK

Most past research in the area of public services has focused on expenditures for public services rather than performance levels. Thus, we will summarize first, the extensive expenditure determinant literature to assess major predictors of public service inputs. Then, we will discuss two types of output measures; how they relate to each other, and how they are influenced by expenditures and related antecedent variables (see Figure 1).

(Figure 1 about here)

Fabricant (1952) developed a public service function in which three variables (per capita income, population density and percent urbanization) accounted for a large amount of the variation in total public expenditures for the 48 U.S. states. Hawley (1951), about this same time, studied the influence of a wide range of demographic, social and economic variables in predicting variations in various types of expenditures for 76 large U.S. cities. A considerable amount of research has been generated over these last 20 years to refine, extend, and justify various determinants of expenditures for various public services (see reviews by Bahl, 1969; Schmandt and Stephens, 1963; Crecine, 1970; Bish and Ostrom, 1973; Hirsch, 1977; Foley, 1978).

In retrospect, however, it appears as if no major advances have been made in this tradition since Fabricant's (1952) study, except perhaps the addition of a "diversified smorgasboard of explanatory variables" (Hirsch, 1977:314). When inspecting the expenditure determinant literature for various public services, the overall results seem to indicate that four types of variables--a locality's level of income (Fabricant, 1952; Fisher, 1964; Sacks and Harris, 1964), degree of urbanization, population density or ecological position (Fabricant, 1952; Shapiro, 1963), the growth or decline of cities in terms of popu-

lation (Hirsch, 1977:315) and some measure of welfare dependency such as percentage of families with income of less than a given poverty level (Fisher, 1964; Adams, 1965) or percent nonwhite (Shapiro, 1963; Adams, 1965; Campbell and Sacks, 1967)--are major determinants of expenditures for various public services. These variables seem to tap what Lyon (1978:428) refers to as the major demographic-ecological dimensions of U.S. communities.

Fabricant (1952) explained 72% of the variation in total public expenditures, ranging in explained variance for specific services from 85% for fire expenditures to 29% for highway expenditures. Other studies have not been so predictive (e.g., 6% for recreation expenditures, Brazer, 1959). The explanatory power of Fabricant's variables for such areas as educational expenditures were also quite weak because of state and federal revenue transfers (c.f., Pidot, 1969; Campbell and Sacks, 1971). In recent years, income transfers have greatly decreased per capita expenditure variation between states, counties, or cities. Fisher (1964), in a replication of Fabricant's 1949 data with 1959 data, found considerable decline in the explanatory power of Fabricant's three variables and suggested that this was due to the increased complexity of financial relationships between different levels of government.

Hirsch (1977:315) observes that a very important aspect of service outputs has been "flagrantly" ignored in much of the literature on expenditure determinants: "...expenditure determinant studies do not elucidate either changes in cost or level of output, since total expenditures basically measure the product of output and cost per unit of output." Traditionally, some indicator of expenditures or average unit of cost were used as output measures in expenditure determinant analysis for such public services as police, fire, education, water, sewage and the like (Stinson and Krahmer, 1969; Gastil, 1970; also see review of 13 studies by Ostrom, 1972). Today, expenditures are more likely to be considered inputs rather than outputs. Ostrom (1972) considers service outputs to be the result of a process which translates inputs (such as expenditures) to

the product desired. Before discussing various output measures, three points about expenditure determinant research should be stressed. First, considerable research has been conducted on determinants of variation in public services, almost all of which has employed some type of expenditure measure as the dependent variable. Second, one cannot study public services without taking into account the demographic and socioeconomic determinants of public services (hereafter called antecedent variables) as demonstrated by Fabricant and others. Third, expenditures should be considered input measures.

Defining what are not outputs seems to be easier than clearly defining what are service outputs. Fisk and Winnie (1974:725), in their review of present status of output measures observe that "The maze of terminology in this area is enough to stop short any meaningful discussion of the subject." Output measures of government for various public services are developing so rapidly and from so many different perspectives that consensus in scope or meaning is difficult. Fisk and Winnie (1974) attempt to summarize a wide range of terms which have been introduced as outputs (e.g., effort, effect, performance, efficiency, impact). Such output measures can be classified (a) as those which deal with the quantitative characteristics of a service performance (or impact or effectiveness), and (b) as those which tap the qualitative dimension of service performance. Quantitative measures include agreed upon objective measures of service performance, while qualitative measures are based upon citizen collective appraisals of a public service. The former reflects agency output while the latter provides citizen evaluation of both the agency and the service provided. For example, in the case of education, dropout rates or achievement test scores would be considered a quantitative output measure, and citizen perceptions of the quality of education or of educational services would be considered a qualitative output measure. Fisk and Winnie (1974:726) observe that this quantitative-qualitative differentiation of output measures corresponds to Ostrom's (1972) labels of output and impact, Suchman's (1967) labels of effort and performance

and Davis' (1970) labels of output and effectiveness. While Fisk and Winnie (1974) permit both objective and subjective measures of qualitative output, this paper will limit qualitative outputs to subjective appraisals. Campbell and Converse (1972) argue that quality is a human appraisal which exists in the eye of the beholder. Shin (1977) points out that using subjective indicators for assessing public services is more a phenomenological approach which seeks to evaluate the quality of public services through the eyes of consumers and is a more direct measure than the commonly used agency quantitative performance measure. This relates back to the initial question raised early in the paper: Is the proper measure of a service its properties, or peoples' perception of them?

While one can historically document sporadic attempts to compile and measure service outputs (e.g., the Research Commission appointed by President Hoover in 1928), most work in this area has appeared in the last decade and focused extensively on quantitative outputs. In reviewing the literature on output measures for public services, Fisk and Winnie (1974:731) draw three conclusions. First, that most large governments (cities with populations greater than 50,000 or counties of more than 100,000 population) collect some data on quantitative outputs (e.g., tons of garbage collected, crime rates, education dropout rates). Second, few governments collect data on qualitative aspects of outputs (e.g., visual appearance of streets, citizens' feelings of security, citizens' perceptions of quality of library services). And third, the state of measurement varies dramatically by service or program area and little comparative analysis has been undertaken.

Only a limited amount of research has been conducted on the relationship of quantitative outputs to qualitative assessments of outputs. Ostrom (1977), in reviewing some recent research in this area, found a close tie between quantitative and qualitative output measures. She concluded: "Given that citizens seem to be fairly accurate in their perception of specific and clear-cut attri-

butes of road repair and street lighting, one can have somewhat more confidence that citizens will be fairly accurate in their perception of specific attributes of other services" (1977:284). Fisk and Winnie (1974:731) in their review observe that for engineering oriented services such as water and sewage treatment or solid waste disposal, there exists reasonably good objective measures of both quantity and quality. For other service areas, measurements of quantity and particularly perceived quality, are poor or entirely lacking. It should not be automatically assumed that quantitative output measures are highly correlated with qualitative output measures. Shin (1977:209) points out that quantitative measures are generally derived from agency records and census material and are limited in the extent to which they are useful in estimating the social and psychological impacts of service activity on consumers. For example, the crime index, a common measure of public safety, may or may not be associated with citizen evaluation of police performance or public safety.

The relationship of input measures (such as expenditures) with either quantitative or qualitative outputs is confusing. For example, Schmandt and Stephens (1960) found a negative relationship between per capita expenditures and 65 police activities or performance categories. Stinson and Krahmer (1969) found very little relationship between per capita expenditures on education and their measures of pupil performance. However, little information is available and inferences about such relationships require additional investigation.

Since the literature is ambiguous on some of the relationships outlined here (and presented in Figure 1), the following null hypotheses are proposed to facilitate subsequent analysis and discussion: 1) Antecedent variables will have no effect on a) expenditures, b) quantitative performance measures, c) quality of public services measures; 2) Expenditures will have no effect on a) quantitative performance measures, b) quality of public services measures; and 3) Quantitative performance measures will have no effect on qualitative measures of public services.

PROCEDURES

Since the study is concerned with inputs and outputs of public services, the county rather than the community is selected as the unit of analysis. From a policy perspective, the county is the administrative unit for statewide public services (Derr, 1975; Eberts, 1973, 1974; Foley, 1977). Rossi (1972:91) observes that a community in a symbiotic sense usually refers to larger groupings than the geographical bounds of a community. He notes that a city plus its surrounding hinterland may be viewed as a community engaged in intensive intra-area exchange of sociability, goods and services. In the South, particularly in North Carolina, the county seat is the major service center for a county. And, as observed by other researchers (Arensberg, 1955; Fuguitt, 1965; Seiler and Summers, 1974) the community/county seat and the county can be equated in a symbiotic sense in the South because of the smallness of the county and the historical location of the county seat based on central place theory. The data presented are aggregated data for the 100 counties in North Carolina.

The qualitative evaluation of the public services comes from a 1975 statewide mail survey conducted in all 100 counties of North Carolina. The sample was drawn using both a proportionate and an oversample technique to provide sufficient respondents from each county. An average of 89 respondents in each county returned usable questionnaires with response rates for all counties average 66% (Christenson, 1976).

The qualitative output measure for each service was based upon citizen evaluation of service quality as poor, fair, good, or excellent on a four-point Likert scale. The exact wordings of the response categories for the five public services were: quality of libraries, quality of elementary and secondary education, quality of county and city law enforcement, quality of public parks and playground, quality of medical services and facilities. Shin (1977:210) argues that public services are property conceived as a community-level phenomenon rather than an individual-level phenomenon. Following this perspective, individ-

ual qualitative evaluations were aggregated to produce a mean score of the collective experience of the citizenry for each county. All services studied in this paper existed in each county.

Objective indicators of the quantitative output or performance of services generally following the discussion and examples of output measurement described by Fisk and Winnie (1974) and as outlined by Hatry and Fisk (1971). Specific measures employed with the associated service are: dropout rate (education), crime index (police), per capita acres in public parks (parks), infant mortality rate (medical), number of books per capita (public libraries).[2] Data were obtained from the appropriate agency/division of the North Carolina State government.[3]

Input measures for the five public services were based on expenditures. Per capita expenditure data for each of the services comes from the Census of Government, Volume 4, Number 3, 1972, pages 157 to 161. All expenditure variables plus other variables where the standard deviation was larger than the mean indicating a skewed distribution were subjected to logarithmic transformation.[4]

The antecedent variables were selected in light of the expenditure determinate literature, and include density, population change, race and income. Data for density, 1975, county population change between 1970 and 1975, and percent nonwhite in 1975 come from the North Carolina Department of Administration, Division of Planning. Per capita income estimates for 1975 come from the Bureau of the Census.

FINDINGS

Zero order correlations between the variables used in this analysis are presented in Table 1. Within the socio-demographic (antecedent) variables, the correlation between income and density is rather strong ($r=.65$), indicating the possibility of multicollinearity. However, the explained variance in this bivariate relationship is only 42% and, according to Heise (1969), one should not

expect a serious problem with multicollinearity unless the correlation coefficient is at or above 0.80. No pair of independent variables is correlated above .65.

(Table 1 about here)

Generalizing across services, the following bivariate relationships were observed: (1) the antecedent variables have only a moderate association with public service expenditures; (2) of the antecedent variables, income and density have the strongest correlations with the quantitative and qualitative measures of service performance, although this is more clearly the case for the qualitative measures; (3) public service inputs, as measured by expenditures, have a relatively weak association with both quantitative and qualitative indicators of service outputs; and (4) there seems to be a moderately strong relationship between several of the quantitative and qualitative measures of performance.

In order to determine the relationships between public service inputs and quantitative and qualitative assessments of service outputs within the socio-demographic context of the service delivery area, a series of simple repression analyses were conducted. Within each public service considered, a separate equation was calculated successively using socio-demographic factors, the expenditure input measure and the quantitative output measure as independent variables regressed against the one input and two output measures (Table 2).[5]

(Table 2 about here)

As suggested by the bivariate analysis, the antecedent variables explain only a small amount of the variance in the expenditure measures of service inputs, ranging from a low of five percent for law enforcement to 27 percent for parks. This is in accord with past research which has monitored a decrease in the explanatory power of such factors for public service expenditures (Fisher, 1964). Examining the effects of the socio-demographic characteristics on the various service inputs, there is no single antecedent variable which is highly predictive across the five public services. Rather, it seems that service

expenditures are affected uniquely by different antecedent variables relevant to the nature of the particular service. For example, libraries and parks which rely largely on local funding are affected by local income levels.

Turning to the quantitative performance measures of service output, there exists a wide difference in the variance explained by the antecedent variables, from 12 percent for medical services to 77 percent for law enforcement. Interestingly, only in the case of public libraries does the measure of service input (per capita expenditures) have a significant effect on this measure of output. It suggests that, at least for the indicators used here, quantitative measures of service output may be a function more of the socio-demographic situation within which the service exists than the amount of tax dollars expended on the service. To give an example from an educational perspective, the high school dropout rate may be caused more by the cultural milieu in which students reside than expenditures for these same students' schooling.

Utilizing the factors discussed above as predictors of citizens' perceptions of service quality, we find that these variables explain a high degree of the variance in the qualitative measures across all the services. The explained variance ranges from 27 percent (libraries) to 57 percent (parks). However, an examination of the affects of the antecedent, input, and quantitative output measures reveal that no single variable is consistently powerful in its effect on the qualitative evaluations of service performance. Only if the antecedent variables are considered as a group, do we uncover any clear patterns. It seems as if the socio-demographic characteristics of a locality contribute more to the variation of citizens' perceptions of the services provided them, than variations in the inputs to, or commonly accepted measures of outputs from, these same services. Of particular interest is the relationship between the quantitative and qualitative output measures when considered within a socio-demographic context. Only two services (law enforcement and parks) show significant effects existing between these two measures.

In summary, the findings show that hypotheses 1b and 1c can be rejected. The antecedent (socio-demographic) variables do have a significant relationship with quantitative and qualitative measures of output but do not have a significant relationship with expenditure inputs (hypothesis 1a). Likewise, expenditures do not have a significant relationship with either quantitative or qualitative output measures (the one exception being library services). Thus, the null hypothesis 2a and 2b cannot be rejected. Finally, the results of the test of hypothesis 3 are mixed, with only two of five services showing a significant relationship between quantitative and qualitative output measures. This hypothesis is not rejected on the grounds that it is more desirable to reject a true hypothesis than accept a false hypothesis.

IMPLICATIONS

The geographical location and time period of the study along with the specific indicators selected to measure outputs for the five public services need to be kept in proper perspective. But given these limitations, the findings do suggest some theoretical and policy relevant issues for consideration. First, since we used variables common to much of the expenditure determinant literature, these findings reinforce Fisher's (1964) observation that the explanatory ability of variables originally used by Fabricant (1952) has been substantially reduced. This is likely the result of the increased complexity of financial relationships between federal, state, and local government. This is partially supported in the data inasmuch as the explained variances on expenditures for parks and libraries--public services primarily funded by local government--were higher than the explained variance for law enforcement, health and education which have substantial federal and state income transfers.

Second, while these results do not focus on varying perspectives within the expenditure determinant literatures, particularly as it relates to different public services, the findings do clearly demonstrate that inputs such as per capita expenditures should not be equated with output measures. Expenditures

are not a strong predictor of either quantitative or qualitative output measures for the five public services studied.

Third, Ostrom (1977) found a close relationship between quantitative measures and perceived qualitative measures for road repair and street lighting concluding that such a correspondence could be expected in other service areas. Our findings suggest that such a conclusion may be a bit overly optimistic. In two instances (parks and law enforcement) quantitative measure did have strong predictive relationships with qualitative measures. In the other three service areas they did not. This cannot be taken as a repudiation of Ostrom's findings, for it likely reflects the specific indicators selected to measure the quantitative and qualitative outputs. But the findings do raise some questions that only further research can answer.

Fourth, the findings show that the situation (the social, economic and demographic context) in which the service is produced is more important in predicting quantitative measures than expenditure inputs. Density and racial composition appear to be the most important determinants with more heavily populated and more homogeneous areas rating higher on service quantitative performance measures than less populated or more heterogeneous areas.

Fifth, the findings also suggest that the situation in which the service is produced seems to be more important in predicting citizen perception of service quality than either the expenditure inputs or the quantitative performance outputs. Density is a consistently strong predictor of perceived service quality with more heavily populated counties reporting higher quality service than less populated counties. Income and race are also important determinants for some, but not all, services studied.

Finally, these five implications suggest that peoples' perception of quality of public service are associated more with the situation in which the service is produced than with either expenditure inputs or quantitative performance measures of services. Of course, this assumes that the objective conditions of

a service should be reflected in subjective evaluations. Perhaps we need to rethink this assumption. Is the proper measure of a public service its objective properties or peoples' perceptions of them? Peoples' perceptions of service quality may be misleading if they are expected to reflect objective service conditions because perceptions of quality seem to be more a product of the locality situation than a reflection of the service itself.

FOOTNOTES

[2]For ideas about what should be done to improve performance of specific public services and examples of a wider range of output measures, see Hatry et al., 1977.

[3]Data for the year 1975 were gathered from the following sources: dropout rate, North Carolina Department of Public Education, Table 12, 123-29, 1976; crime index, North Carolina Department of Justice, Police Information Network, State of North Carolina, Uniform Crime Report, January-December 1975, pp. 54-70; park acreage, North Carolina Department of Natural and Economic Resources, Statewide Comprehensive Outdoor Recreation Plan for North Carolina, 1976-77; infant mortality rate, North Carolina Department of Human Resources, Division of Health Services, North Carolina Vital Statistics, 1975, Vol. I, Births, Deaths, Populations, Marriages, Divorces, pp. 5-1-5-100; library books, North Carolina Department of Cultural Resources, Division of Public Libraries, Statistics and Directory of North Carolina Public Libraries, July 1, 1975-June 30, 1976, pp. 6-8.

[4]The density variable was logarithmicly transformed as this increased the explanatory power of this variable over its linear counterpart significantly in almost every case.

[5]Linear least squares regression analysis was used throughout. Examination of residuals indicated no evidence of abnormalities in any equations.

Figure 1: Model of Input and Output Measures.

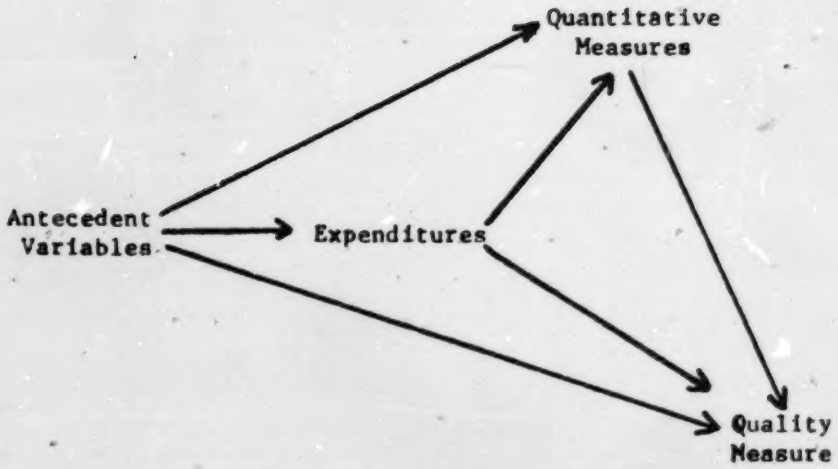

TABLE 2: Standardized Regression Coefficients of Antecedent Variables for Expenditures (Exp.), Performance (Perf.), and Quality of Public Services (N = 100)

	Education			Law Enforcement			Medical			Libraries			Parks		
Variables	Exp.	Perf.	Qual.	Exp.	Perf.	Qual.	Exp.	Perf.	Qual.	Exp.	Perf.	Qual.	Exp.	Perf.	Qual.
Density	-.04	-.14	.31*	.04	.75*	.23*	.19*	.28*	.68*	-.17	-.50*	.29*	.36*	.69*	.16
Population change 1970-75	.00	.00	-.16	.23*	.11	-.04	-.05	.12	.03	.03	.03	.07	.09	-.04	.08
Race (% non-white)	.30*	.23*	-.48*	.15	.23*	.05	.10	.30*	-.06	-.28*	.08	-.11	-.02	.07	-.23*
Income (per capita)	-.07	-.15	.09	.01	.17*	.12	.17	-.16	.13	.37*	.16	.14	.19*	.05	.19*
Expenditures (per capita)	--	.05	.05	--	.08	.03	--	.13	.07	--	.35*	.21*	--	.10	.05
Performance measure		--	-.16		--	.31*		--	.07		--	-.01		--	.37*
R^2	.11	.15	.46	.05	.77	.37	.12	.12	.63	.17	.28	.27	.27	.61	.57

*$p \leq .05$

Table 1: Correlations with Means and Standard Deviations for County Level Variables (N = 100).

Public Service Measures	Input/Output Measures			Antecedent Variables					
	Expenditures[a]	Quantitative	Qualitative	Density[a]	Population Change (1970-75)	Race (% nonwhite)	Income (per capita)	Mean	Standard Deviation
Education:									
Expenditures[a]	--			-.13	-.11	.31*	-.12	14.40	.52
Quantitative	.16	--		-.25*	-.09	.28*	-.27*	8.63	1.48
Qualitative	-.16	-.38*	--	-.13	-.11	.31*	-.12	2.39	.20
Law Enforcement:									
Expenditures[a]	--			.03	.17	.07	.01	8.03	.38
Quantitative	.13	--		.84*	.07	.05	.61*	4.21	1.54
Qualitative	.07	.57*	--	.54*	-.02	.05	.47*	2.33	.26
Medical:									
Expenditures[a]	--			.29*	.08	-.09	.29*	8.78	1.05
Quantitative	.24*	--		.75*	.06	-.17*	.58*	18.84	8.73
Qualitative	-.09	.10	--	.04	.02	.23*	-.05	2.15	.41
Library:									
Expenditures[a]	--			.15	.10	-.26*	.27*	7.94	.48
Quantitative	.28*	--		.41*	.14	-.28*	.39*	1.43	.53
Qualitative	.31*	-.05	--	-.36*	.03	.00	-.08	2.55	.31
Parks:									
Expenditures[a]	--			.50*	.07	-.10	.41*	.80	1.30
Quantitative	.42*	--		.62*	.19*	-.35*	.53*	3.49	2.45
Qualitative	.47*	.65*	--	.77*	.02	-.17*	.54*	1.91	.38
Antecedent Variables:									
Density[a]				--				4.35	.85
Population change				.03	--			7.66	7.38
Race				-.14	-.36*	--		24.93	17.05
Income				.65*	-.06	-.06	--	4422.42	679.14

[a] log transformation

*p ≤ .05

REFERENCES

Adams, Robert F.

1965 "On the variations in the consumption of public services." Review of Economics and Statistics 47 (December):400-6.

Arensberg, Conrad M.

1955 "American communities." American Anthropologist 57:1143-1162.

Bahl, R.W.

1969 Metropolitan City Expenditures: A Comparative Analysis. Lexington: University of Kentucky Press.

Bish, Robert L. and Vincent Ostrom

1973 Understanding Urban Government: Metropolitan Reform Reconsidered. Washington, D.C.: American Enterprise Institute.

Brazer, Harvey E.

1959 City Expenditures in the United States. National Bureau of Economic Research, Occasional Paper #66.

Campbell, Angus and Phillip Converse

1972 The Human Meaning of Social Change. New York: Russell Sage Foundation.

Campbell, Alan K. and Seymour Sacks

1967 Metropolitan America: Fiscal Patterns and Governmental Systems. New York: The Free Press.

Christenson, James A.

1976 "Quality of community services: a macro-unidimensional approach with experiential data." Rural Sociology 41 (Winter):509-525.

Clark, Terry N.

1975 "Community power." Annual Review of Sociology 1:271-295.

Crecine, John P. (ed.)

1970 Financing the Metropolis: Public Policy in Urban Economics. San Francisco: Russell Sage Foundation.

Davis, Robert H.

1970 "Measuring the effectiveness of municipal services." Management Information Service. (August):3-4.

Derr, Donn A.

1975 "The unit control." Methodological Considerations in Researching Community Services in the Northeast. New Jersey Agricultural Experiment Station Bulletin, 836.

Eberts, Paul R.

1973 "The most rural of the planning regions in New York State." Ithaca, New York: Cornell University, Department of Rural Sociology (mimeograph).

1974 "Trends in equality in the northeast: major empirical dimensions." Ithaca, New York: Cornell University, Department of Rural Sociology (mimeograph).

Fabricant, Solomon

1952 The Trend in Government Activity Since 1900. New York: National Bureau of Economic Research.

Fisher, Glenn W.

1964 "Interstate variations in state and local government expenditures." National Tax Journal 17 (March):57-75.

Fisk, D.M. and R.E. Winnie

1974 "Output measures in urban government: the current status and likely prospects." Social Science Quarterly 54 (May):725-740.

Foley, John W.

1977 "Trends, determinants and policy implications of income inequality in U.S. counties." Sociology and Social Research 61 (4):441-461.

1978 A Comparative Study of the Determinants of Public Policies. Occasional Paper #9, Ithaca: Cornell University Program in Urban and Regional Studies.

Fuguitt, Glenn V.

1965 "County seat as a factor in small town growth and decline." Social Forces 44 (December):245-251.

Gastil, Raymond

1970 "Social indicators and the quality of life." Public Administration Review 30 (December):596-601.

Glasberg, Andrew

1978 "Organizational response to municipal budget decreases." Public Administration Review 38 (4):325-332.

Greene, Vernon, E. Ostrom, R. Park and R. Rich

1977 The Measures Project - A Theoretical and Methodological Overview. Measures Technical Report #1. Workshop in Political and Policy Analysis. Bloomington, Indiana.

Hatry, Harry P. and Donald M. Fisk

1971 Improving Productivity and Productivity in Local Government. Washington, D.C.: National Commission on Productivity.

Hatry, Harry, L. Blair, D. Fisk, J. Greiner, J. Hall and P. Schaenman

1977 How Effective Are Your Community Services: Procedures for Monitoring the Effectiveness of Municipal Services. Washington, D.C.: The Urban Institute.

Hawley, Amos H.

1951 "Metropolitan population and municipal government expenditures." Journal of Social Issues 7 (1951):11-108.

Heise, David R.

1969 "Problems in path analysis and causal inferences." Pp. 38-73 in E.F. Borgatta (ed.), Sociological Methodology. San Francisco, Jossey-Bass.

Hirsch, Werner Z.

1977 "Output and costs of local government services." National Conference on Nonmetropolitan Community Service Research. Washington, D.C.: U.S. Government Printing Office.

Lyon, Larry

1968 "Community power and policy outputs: a question of relevance?" Pp. 418-439 in Roland C. Warren (ed.), New Perspectives on the American Community. Chicago: Rand McNally.

Ostrom, Elinor

1972 "Metropolitan reform: propositions derived from two traditions." Social Science Quarterly 53 (December):474-493.

1976 "Size and performance in a federal system." Publius 6 (Spring):33-73.

1977 "Why do we need multiple indicators of public service outputs?" National Conference on Nonmetropolitan Community Service Research. Washington, D.C.: U.S. Government Printing Office.

Pidot, George, Jr.

1969 "A principal components factor analysis of the determinants of local government fiscal patterns." Review of Economics and Statistics 4 (May):177-88.

Rossi, Peter H.

1972 "Community social indicators." Pp. 87-126 in A. Campbell and P. Converse (eds.), The Human Meaning of Social Change. New York: Russell Sage Foundation.

Sacks, Seymour and Robert Harris

1964 "The determinants of state and local government expenditures and intergovernmental flaws of funds." National Tax Journal 17 (March):75-86.

Schmandt, Henry J. and G. Ross Stephens

1960 "Measuring municipal output." National Tax Journal 13 (December):369-375.

1963 "Local government expenditure patterns in the U.S." Land Economics 39 (Nov.):397-406.

Schuman, H. and B. Gruenberg

1970 "The impact of city on racil attitudes." American Journal of Sociology 76:369-392.

Seiler, Lauren and Gene F. Summers

1974 "Locating community boundaries: an integration of theory and empirical techniques." Sociological Methods and Research 2 (Feb.):259-280.

Shapiro, H.

1963 "Economies of scale and local government finance." Land Economics 39 (May):125-86.

Shin, Doh C.

1977 "The quality of municipal services: concept, measure and results." Social Indicators Research 4:207-229.

Stinson, Thomas F. and Edward Krahmer

1969 "Local school expenditure and educational quality: a correlation analysis." American Journal of Agricultural Economics 51 (Dec):1553-6.

Suchman, Edward A.

1967 Evaluation Research. New York: Russell Sage Foundation.